AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (*Currently Amended*) A method of compensating for a possible delay between two or more radio transmission paths in space diversity radio transmissions, said method comprises~~comprising the steps of~~:

[[-]] receiving a first analog signal;

[[-]] receiving at least one second ~~further~~ analog signal;

[[-]] sampling said first and said at least one second ~~further~~ analog signals to obtain a first digital signal and at least one second ~~further~~ digital signal, respectively, a possible delay being present between the first and the at least one second ~~further~~ digital signals; and

[[-]] sending said digital signals to respective equalizers;

~~wherein said method further comprises the step of~~

[[-]] delaying in a digital manner one of said first digital signal and said at least one second ~~further~~ digital signal by a period equal to an integer multiple of the sampling period, and optionally ~~possibly the further step of~~

[[-]] recovering, at ~~the~~ equalization ~~step~~, the difference between the imposed delay and the real delay~~one~~.

2. (*Currently Amended*) A method according to claim 1, wherein ~~the~~ delaying ~~step~~ comprises ~~the step of~~ calculating[[,]] ~~in an automatic manner,~~ the value of the integer multiple, wherein ~~said step of~~ calculating the integer multiple ~~in turn~~ comprises ~~the steps of~~:

[[-]] realizing delayed replicas $r_{1j}(kT_{sa}) = s_1(kT_{sa} - jT_{sa})$ and $r_{2i}(kT_{sa}) = s_2(kT_{sa} - iT_{sa})$ of said first and said at least second ~~a further~~ digital signals, with $0 \le j \le N_1$ and $0 \le i \le N_2$, $N_1 T_{sa}$ being the maximum assumable delay of the first signal with respect to the at least one second ~~further~~ signal and[[,]] ~~similarly,~~ $N_2 T_{sa}$ being the maximum assumable delay of the at least one second ~~further~~ signal with respect to the first signal;[[:]]

[[-]] calculating cross-correlations

$$xc_{1j} = E\left\{\sum_m \sum_n a_n a_m * g_2 * (kT_{sa} - mT) g_1 (kT_{sa} - nT - \tau - jT_{sa})\right\} \text{ with } 0 \le j \le N_1,$$

$$xc_{2i} = E\left\{\sum_m \sum_n a_m a_n * g_1^* (kT_{sa} - nT - \tau) g_2 (kT_{sa} - mT - iT_{sa})\right\} \text{ with } 0 \le i \le N_2,$$

between the various delayed replicated signals, where * denotes the complex conjugate operation and $E\{\cdot\}$ the time average operation; and

[[-]] deriving the maximum value of said cross-correlations as i and j vary, namely $M = \max_{i,j} \left(|xc_{1j}|^p, |xc_{2i}|^p\right)$ said maximum value corresponding to the value of the integer multiple.

3. (*Currently Amended*) A method according to claim 2, wherein the method ~~it~~ further comprises ~~the step of~~ selecting the delayed replica to be sent to said equalizers as a function of the information related to the maximum of the calculated cross-correlations.

4. (*Currently Amended*) An apparatus for compensating a delay between two or more radio transmission lines in space diversity radio transmissions, said apparatus comprising:

[[-]] means for receiving a first analog signal;

[[-]] means for receiving at least one second ~~further~~ analog signal;

[[-]] means for sampling the first and the at least one second ~~further~~ analog signal to obtain a first digital signal and at least one second ~~further~~ digital signal, respectively, a delay being possibly present between the first and the at least one second ~~further~~ digital signals; and

[[-]] equalizers receiving said digital signals at the input;

~~wherein said apparatus further comprises:~~

[[-]] means for delaying in a digital manner one of said first digital signal and said at least ~~lest~~ one second ~~further~~ digital signal by a period equal to an integer multiple of the sampling period, and

equalizer means capable of restoring the difference between an imposed delay and the real delay~~effective one~~.

5. (*Currently Amended*) An apparatus according to claim 4, wherein said delay means comprise means for calculating~~, in an automatic manner,~~ the value of the integer multiple, wherein said ~~automatic~~ calculation means ~~in turn~~ comprise:

[[-]] means for realizing delayed replicas $r_{1j}(kT_{sa}) = s_1(kT_{sa} - jT_{sa})$ and $r_{2i}(kT_{sa}) = s_2(kT_{sa} - iT_{sa})$ of said first and said at least one second ~~further~~ digital signals, with $0 \le j \le N_1$ and $0 \le i \le N_2$, $N_1 T_{sa}$ being the maximum assumable delay of the first signal with respect to the at least one second ~~further~~ signal and[[,]] ~~analogously,~~ $N_2 T_{sa}$ being the maximum assumable delay of the at least one second ~~further~~ signal with respect to the first signal;

[[-]] means for calculating cross-correlations

$$xc_{1j} = E\left\{\sum_m \sum_n a_n a_m * g_2 * (kT_{sa} - mT) g_1 (kT_{sa} - nT - \tau - jT_{sa})\right\} \text{ with } 0 \le j \le N_1,$$

$$xc_{2i} = E\left\{\sum_m \sum_n a_m a_n * g_1^* (kT_{sa} - nT - \tau) g_2 (kT_{sa} - mT - iT_{sa})\right\} \text{ with } 0 \le i \le N_2$$

between the various delayed replicated signals, where * denotes the complex conjugate operation and $E\{\cdot\}$ the time average operation; and

[[-]] means for deriving a maximum value of said cross-correlations as i and j vary, namely $M = \max_{i,j} \left(|xc_{1j}|^p, |xc_{2i}|^p\right)$, said maximum value corresponding to the value of the integer multiple.

6. (*Currently Amended*) An apparatus according to claim 5, further comprising ~~wherein it further comprises~~ switching means for selecting a proper delayed replica to be sent to said equalizer means as a function of information related to the maximum of the cross-correlations calculated.

7. (*Currently Amended*) A computer program comprising computer program code means adapted to perform the method claimed in ~~all the steps of~~ claim 1 when said program is run on a computer.

8. (*Currently Amended*) A computer-readable medium having a program recorded thereon, said computer-readable medium comprising computer program code means adapted to perform the method claimed in ~~all the steps of~~ claim 1 when said program is run on a computer.

9. (*New*) An apparatus for compensating a delay between two or more radio transmission lines in space diversity radio transmissions, said apparatus comprising:

a first receiver that receives a first analog signal;

a second receiver that receives at least one second analog signal;

a sampling circuit that samples the first and the at least one second analog signal to obtain a first digital signal and at least one second digital signal, respectively, a delay being possibly present between the first and the at least one second digital signals;

equalizers that receive said digital signals at their inputs;

a digital delay circuit that digitally delays one of said first digital signal and said at least one second digital signal by a period equal to an integer multiple of the sampling period, and

a restoring equalizer that restores the difference between an imposed delay and the real delay.

10. (*New*) An apparatus according to claim 9, wherein said digital delay circuit comprises a calculation circuit for calculating the value of the integer multiple, wherein said calculation circuit:

a delay circuit that realize delayed replicas $r_{1j}(kT_{sa}) = s_1(kT_{sa} - jT_{sa})$ and $r_{2i}(kT_{sa}) = s_2(kT_{sa} - iT_{sa})$ of said first and said at least one second digital signals, with $0 \le j \le N_1$ and $0 \le i \le N_2$, N_1T_{sa} being the maximum assumable delay of the first signal with respect to the at least one second signal and N_2T_{sa} being the maximum assumable delay of the at least one second signal with respect to the first signal;

a correlation circuit that calculates cross-correlations

$$xc_{1j} = E\left\{\sum_m \sum_n a_n a_m * g_2 * (kT_{sa} - mT) g_1(kT_{sa} - nT - \tau - jT_{sa})\right\} \text{ with } 0 \le j \le N_1,$$

$$xc_{2i} = E\left\{\sum_m \sum_n a_m a_n * g_1^* (kT_{sa} - nT - \tau) g_2(kT_{sa} - mT - iT_{sa})\right\} \text{ with } 0 \le i \le N_2$$

between the various delayed replicated signals, where * denotes the complex conjugate operation and $E\{\cdot\}$ the time average operation; and

a maximum value circuit derives a maximum value of said cross-correlations as i and j vary, namely $M = \max_{i,j}\left(|xc_{1j}|^p, |xc_{2i}|^p\right)$, said maximum value corresponding to the value of the integer multiple.

11. (*New*) An apparatus according to claim 10, further comprising a switch for selecting a proper delayed replica to be sent to said restoring equalizer as a function of information related to the maximum of the cross-correlations calculated.